**Abstract**

Disclosed are a method and a device for grinding a machine part (17) that comprises two shaft elements (18, 19) and a central element (20) having a significantly increased diameter (D). The central element (20) is provided with an effective surface (22), a portion of which is embodied in the form of a flat truncated cone (21). In order to grind the excess material (25) off the effective surface (22), the machine part (17) is clamped between pins (6, 7) that are provided with shafts (4, 5), the shaft (5) located at the tailstock (3) being supported by a steady rest (27). The machine part (17) is movable in the direction of the longitudinal axis (23) thereof. The effective surface (22) of the machine part (17) can be placed against the grinding disk (15) at the line of contact (28), vertical grinding being done by means of the cylindrical outer contour of the first grinding disk (15) such that the cutting speed is constant across the entire axial dimension of the first grinding disk (15) and a very good grinding result is obtained. The first grinding disk (15) is mounted in a floating manner on a grinding spindle (14) along with a second, narrower grinding disk (16). The second grinding disk (16) can be brought into an operating position, in which the cylindrical peripheral areas of the machine part are to be machined by means of longitudinal grinding, by swiveling the spindle (14) about two swiveling axes that are located perpendicular to each other and by displacing the grinding spindle (14) perpendicular to the longitudinal axis (23), the machine part remaining in the same clamped position. The inventive working method results in shortened cycle times while providing for a very good grinding result.